

REMARKS

FIGURE 2 has been corrected, claims 2- 4 have been cancelled, claims 5, 7-9. and 11 have been amended, and new claims 12-14 have been added.

Applicants respectfully request further examination and reconsideration of claims 1 and 5-14 now pending in the application.

If the specification and/or claims should require any further amendment, the kind assistance of the Examiner in entering an Examiner's Amendment would be gratefully appreciated.

The last Office Action dated May 5, 2003 has been carefully considered and indicates that:

- a) Claims 5-7 are objected to under 37 CFR § 1.75(c);
- b) Claims 1-4 are rejected under 35 U.S.C. § 112, *first paragraph*, as failing to comply with the written description requirement;
- c) Claims 1-4 and 8-10 are rejected under 35 U.S.C. § 112, *second paragraph*, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention;
- d) Claims 1, 4, 8, and 9 are rejected under 35 U.S.C. § 102(a) as being anticipated by Gris *et al.*;

- e) Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gris *et al.* in view of Furguson *et al.*; and
- f) Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

FIGURE 2 has been corrected in red to include the reference numeral “**22b**,” the lead line associated with the reference numeral “**22b**,” the third printed connector, the reference numeral “**23b**” associated with the third printed connector, and the lead line associated with the reference numeral “**23b**.”

In response to the Examiner’s objection to claims 2 and 3 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, applicants greatly appreciate the Examiner’s gracious allowance of claims 2 and 3.

REGARDING ALLOWABLE CLAIM 2

Applicants have:

1. Cancelled allowable claim 2 without prejudice or disclaimer.
2. Added new claim 12 to include the limitations of cancelled allowable claim 2 and base claim 1.

3. Cancelled claim 3 without prejudice or disclaimer.
4. Amended claims 5 and 7 to reflect proper dependency.

REGARDING ALLOWABLE CLAIM 3

Applicants have:

1. Cancelled allowable claim 3 without prejudice or disclaimer.
2. Added new claim 13 to include the limitations of cancelled allowable claim 3 and base claim 1.
3. Amended claims 5 and 7 to reflect proper dependency.

In view of the cancellation of allowable claim 2 without prejudice or disclaimer, the addition of new claim 12 to include the limitations of cancelled allowable claim 2 and base claim 1, the cancellation of claim 3 without prejudice or disclaimer, the amendments made *supra* to claims 5 and 7 to reflect proper dependency, the cancellation of allowable claim 3 without prejudice or disclaimer, the addition of new claim 13 to include the limitations of cancelled allowable claim 3 and base claim 1, and the amendments made *supra* to claims 5 and 7 to reflect proper dependency, applicants respectfully submit that the Examiner's grounds for the objection to claims 2 and 3 as being dependent upon a rejected base claim are no longer tenable and applicants therefore respectfully request that the rejection be withdrawn.

In response to the Examiner's objection to claims 5-7 under 37 CFR § 1.75(c), applicants have:

1. Cancelled claims 2, 3, and 4 without prejudice or disclaimer.
2. Amended claims 5 and 7 to reflect proper dependency.

In view of the cancellation of claims 2, 3, and 4 without prejudice or disclaimer and the amendments made *supra* to claims 5 and 7 to reflect proper dependency, applicants respectfully submit that the Examiner's grounds for the objection to claims 5-7 under 37 CFR § 1.75(c) are no longer tenable and applicants therefore respectfully request that the objection be withdrawn.

In response to the Examiner's rejection of claims 1-4 under 35 U.S.C. § 112, *first paragraph*, as failing to comply with the written description requirement, applicants respectfully submit that the invention contains three different embodiments.

**REGARDING THERE ALLEGEDLY NOT BEING A
WRITTEN DESCRIPTION OF "COIL IS OPEN ON
ONE SIDE, THEREBY GENERATING A GAP"**

A first embodiment is shown in **FIGURES 1 and 3** and described at page 5, lines 8-15 and at page 6, lines 9-18 of the application. The result of the "hinge provides flip open links between two circuit board halves..." is a "gap" between the two circuit board halves. In this state the "coil is open on one side" and a "slit 7" occurs.

REGARDING THERE ALLEGEDLY NOT BEING
A WRITTEN DESCRIPTION OF "SLITTED"
PRINTED CIRCUIT BOARD SEGMENT

A second embodiment is shown in **FIGURE 4** and described at page 6, line 19 to page 7, line 2 of the application. The circuit board is a single piece, which has only one gap or "slit." By applying a force to twist the circuit board, the slit will become a gap until the gap size allows the conductor to be moved through the gap in a radial direction.

REGARDING CHANGING
"SLITTED" TO --SLIT--

The coil comprises a single-piece printed circuit board segment that is described by the adjectives twistable and "slitted." Therefore, changing "slitted" to --slit-- would make the describer a noun and not an adjective which would be improper English.

In view of the arguments presented *supra*, applicants respectfully submit that the Examiner's grounds for the rejection of claims 1-4 under 35 U.S.C. § 112, *first paragraph*, as failing to comply with the written description requirement are no longer tenable and applicants therefore respectfully request that the rejection be withdrawn.

In response to the Examiner's rejection of claims 1-4 and 8-10 under 35 U.S.C. § 112, *second paragraph*, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**REGARDING THE LANGUAGE "COIL IS OPEN
ON ONE SIDE, THEREBY GENERATING A GAP"
AND "SLITTED" ALLEGEDLY BEING INDEFINITE**

A first embodiment is shown in **FIGURES 1 and 3** and described at page 5, lines 8-15 and at page 6, lines 9-18 of the application. The result of the "hinge provides flip open links between two circuit board halves..." is a "gap" between the two circuit board halves. In this state the "coil is open on one side" and a "slit 7" occurs.

**REGARDING THE LANGUAGE "THAT
CAN BE OPENED AND THEN CLOSED
AGAIN" ALLEGEDLY BEING INDEFINITE**

The function that the coil "can be opened and then closed again" is shown in **FIGURE 3** and described at page 6, lines 9-18 of the application.

In clarification, the current acquisition coil comprises two printed circuit board halves (or printed conductor parts **1** and **10**). The hinge **6** locates the rotation-axis and provides the turnable movement of the two printed circuit board halves. The printed circuit board halves are flipped open for enveloping the current-carrying conductor **2**.

FIGURE1 shows the two printed circuit board halves of the current acquisition coil in the closed state. In this state, the coil is closed and the current acquisition coil is able to measure the current-carrying conductor **2**.

**REGARDING WHAT IS MEANT BY "PRINTED CIRCUIT
BOARD FOR A CONDUCTOR TO BE MEASURED"**

Claim 8 teaches another embodiment of a current acquisition coil, wherein the printed circuit board is a single piece. The meaning of "printed circuit board for a conductor to be measured" is the same as the printed circuit board recited earlier in the claim, as readily seen in and understood from **FIGURE 5**.

**REGARDING WHAT IS MEANT BY
"AROUND SEVERAL LAYERS"**

The meaning of claims 5 and 9 is that "the printed circuit board (**1**, or **1** and **10**) of the single-piece current acquisition coil is made (or built) by several layers." To clarify this, applicants have amended claims 5 and 9, line 2, to change "**built around**" to **--made of--**.

**REGARDING THE TERM "TWISTABLE"
ALLEGEDLY BEING VAGUE**

The meaning of the term "twistable" in claim 4, with respect to **FIGURE 4**, is that the printed circuit board is a single board **1**, which includes a single slit **7**. To open the slit **7** to a gap, the board **1** must be twisted in a torsion stressed position. For example, one end of the printed circuit board **1** must be turned to the upper side, the other end of the printed circuit board **1** must be turned to the lower (under) side. During this action the current-carrying conductor **2** can be moved in a radial direction through the gap **7** into the middle **8** of the printed circuit board **1** (current acquisition coil).

In view of the amendment made *supra* to claims 5 and 9, line 2, to change “**built around**” to “**made of**” and the arguments presented *supra*, applicants respectfully submit that the Examiner’s grounds for the rejection of claims 1-4 and 8-10 under 35 U.S.C. § 112, *second paragraph*, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention are no longer tenable and applicants therefore respectfully request that the rejection be withdrawn.

In response to the Examiner’s rejection of claims 1, 4, 8, and 9 under 35 U.S.C. § 102(a) as being anticipated by Gris *et al.*, applicants have:

1. Cancelled claim 4 without prejudice or disclaimer.
2. Added new claim 14 to include the limitations of cancelled claim 4 and base claim 1.
3. Amended claims 5 and 7 to reflect proper dependency.

Pursuant to 37 CFR § 1.111(c), claims 1, 14 (former claim 4), 8, and 9 define the following advantageous distinctive features that distinguish over and avoid the prior art:

REGARDING CLAIM 1

“...the current acquisition coil is open on at least one side, thereby generating a gap (7) that can be opened and then closed again.”[Emphasis added]

REGARDING CLAIM 14 (FORMER CLAIM 4)

- a) "...the current acquisition coil is open on at least one side, thereby generating a gap (7) that can be opened and then closed again."[Emphasis added]; and
- b) "...the coil comprises a single-piece, slitted, and twistable printed circuit board segment (1)." [Emphasis added]

REGARDING CLAIM 8

"...the printed circuit board (1, 10) for a conductor to be measured accommodates electrical terminals (56), which are connected to each other via printed conductors (52, 54) and at least one through plating (53) in an axial direction in a center of the coil." [Emphasis added]

REGARDING CLAIMS 5 AND 9

"...the printed circuit board (1, or 1 and 10) of the current acquisition coil is made of several layers." [Emphasis added]

It is well settled that each and every limitation of a claim must be met in determining patentability, as was decided in *In re Miller*, 169 USPQ 597 (CCPA 1971), where the Court held:

"All words in a claim must be considered in judging the patentability of that claim against the prior art."[at 600][Emphasis added]

When the printed circuit board-based current sensor of the present invention is designed in accordance with the advantageous distinctive features of claims 1, 14, 8, and 9 discussed *supra, inter alia*:

1. A non-permanently fixed current-carrying conductor can be measured while the current-carrying conductor is in use without interrupting or separating the current-carrying conductor by moving the current-carrying conductor into the center of the current acquisition coil without interrupting or separating the current-carrying conductor [page 2, line 22 to page 3, line 1, page 3, lines 6-9, and page 11, lines 2-3 of the application] *ipso facto* "...the current acquisition coil is open on at least one side, thereby generating a gap (7) that can be opened and then closed again." [Emphasis added] and "...the coil comprises a single-piece, slitted, and twistable printed circuit board segment (1)."[Emphasis added][claims 1 and 14].
2. A permanently fixed current-carrying conductor which is no longer moved around after installation can be measured by virtue of the current-carrying conductor parts being positioned on the outer periphery of the printed circuit board and the through-plating segment of the current-carrying conductor being positioned at the center of the printed circuit board [page 7, lines 7-10 and 14-16 of the application] *ipso facto* "...the printed circuit board (1, 10) for a conductor to be measured accommodates electrical terminals (56), which are connected to [the current-carrying conductor] and to each other via

printed conductors (52, 54) and at least one through plating (53) in an axial direction in a center of the coil.”[Emphasis added][claim 8].

3. The single-piece current acquisition coil is compact because of more free space for the geometric configuration of the printed conductors by virtue of the single-piece current acquisition coil being on a multi-layered printed circuit board [page 3, lines 13-16 and page 4, lines 1-9 of the application] *ipso facto* “...the printed circuit board (1, or 1 and 10) of the current acquisition coil is made of several layers.”[Emphasis added][claims 5 and 9].

So it can be seen that the shape of the current acquisition coil of the present invention being slitted is not merely a matter of design choice, but is significant and of critical importance. It therefore must be considered in determining patentability, as was decided in *In re Dailey and Eilers*, 149 USPQ 47 (CCPA 1976), where the Court held that the shape of a device must be considered in determining patentability, if the shape is significant:

"Appellants have presented no argument which convinces us that the particular configuration of their container is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces in the collapsed container of Matzen. See *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459."
[Emphasis added]

Turning now to the reference to *Gris et al.*, applicants respectfully submit that when issuing a 102 rejection all of the same elements must be found in exactly the same situation and united in the same way to perform the identical function in the prior art patent, as was

decided in *Kockum Industries, Inc. v. Salem Equipment, Inc., et al.*, 175 USPQ 81 (Court of Appeals, Ninth Circuit 1972), where the Court held:

"Anticipation is strictly a technical defense. Unless all of the same elements are found in exactly the same situation and united in the same way to perform the identical function in a prior pleaded patent, there is no anticipation." *Stauffer v. Slenderella Systems of California*, 254 F.2d 127, 128, 115 USPQ 347, 348-349 (9th Cir. 1957); *National Lead Company v. Western Lead Products Company*, 324 F.2d 539, 544, 139 USPQ 324, 327-328 (9th Cir. 1963)."[at 82, footnote 1][Emphasis added]

Furthermore, it is well settled that in order for a rejection under 35 U.S.C. § 102 to be valid, each and every limitation must be met by a single reference, as was supported in *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 USPQ.2d 1001, 1010 (Fed. Cir. 1991), where the Court held:

"...finding of anticipation requires that all aspects of claimed invention were already described in single reference...."[Emphasis added][at 1002][Emphasis added]

"...finding of anticipation requires that all aspects of the claimed invention were already described in a single reference...."[Emphasis added][at 1010][Emphasis added]

Moreover, for a reference to disclose each and every element of a claim, it must disclose it with sufficient clarity to prove its existence, as was decided in *Motorola, Inc. v. Interdigital Technology Corporation*, 121 F.3d 1461, 43 USPQ.2d 1481 (Fed. Cir. 1997), where the Court held:

"...in order for prior art reference to anticipate claim, reference must disclose each and every element of claim with sufficient clarity to prove its existence in prior art...presumed knowledge does not grant license to read into prior art reference teachings that are not there...."[at 1482][Emphasis added]

"For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art...presumed knowledge does not grant a license to read into the prior art reference teachings that are not there."[at 1490][Emphasis added]

When applying the decisional law discussed *supra*, applicants respectfully submit that *Gris et al.* do not teach with sufficient clarity to prove the existence that "...the current acquisition coil is open on at least one side, thereby generating a gap (7) that can be opened and then closed again."[Emphasis added][claims 1 and 14], "...the coil comprises a single-piece, slitted, and twistable printed circuit board segment (1)."[Emphasis added][claim 14], "...the printed circuit board (1, 10) for a conductor to be measured accommodates electrical terminals (56), which are connected to each other via printed conductors (52, 54) and at least one through plating (53) in an axial direction in a center of the coil."[Emphasis added][claim 8], and "...the printed circuit board (1, or 1 and 10) of the current acquisition coil is made of several layers."[Emphasis added][claims 5 and 9]

In contradistinction, with reference to claims 1 and 14, *Gris et al.* do not teach "...the current acquisition coil is open on at least one side, thereby generating a gap (7) that can be opened and then closed again."[Emphasis added] and "...the coil comprises a single-piece, slitted, and twistable printed circuit board segment (1)."[Emphasis added] as required by the advantageous distinctive features of claims 1 and 14, but rather teach a **CLOSED** Rogowski

coil, and therefore free of a gap or slitted, which is provided by conductors on a single-piece printed circuit board. Furthermore, Gris *et al.* disclose that the coil is implemented by conductors on opposing faces of the plate (printed circuit board), as shown in **FIGURE 2** of Gris *et al.* and as discussed at numerous occurrences throughout Gris *et al.*, for example:

“...the coil being implemented by rectilinear metal deposits on each of the two faces of the plate....”[abstract, lines 2-3, col. 1, lines 55-57, and claim 1, lines 4-6 of Gris *et al.*][Emphasis added];

“....electrical connections between the radii on one face and those on the opposite face....”[col. 1, lines 59-61 and claim 1, lines 8-9 of Gris *et al.*][Emphasis added];

“The coil is constituted by deposits of copper such as **3** which are disposed on each of the faces of the plate.”[col. 2, lines 41-42 of Gris *et al.*][Emphasis added];

“...the deposits on one of the faces are connected to the deposits on the opposite face....”[col. 2, lines 45-46 of Gris *et al.*][Emphasis added]; and

“...the first winding **10** is shown in continuous thick lines wherever the deposit is on the visible face of the plate, and in dashed thick lines wherever the deposit is on the other face; the second winding **20** is represented by a continuous pair of lines or by a dashed pair of lines depending on whether the deposit is on the visible face or on the opposite face.”[col. 2, lines 67 to col. 3, line 5 of Gris *et al.*][Emphasis added].

The Rogowski coil (current acquisition coil) of Gris *et al.* includes a hole in the center of the coil through which the current-carrying conductor must be passed before it can be used,

as shown in **FIGURES 1 and 3** of *Gris et al.* and as discussed at col. 2, lines 39-40 of *Gris et al.*, where it is disclosed:

“The preferably square plates includes a central hole 2 for receiving cable whose current is to be measured.”[Emphasis added]

Gris et al., however, are silent as to how the current-carrying conductor is moved into the center hole of the coil. With the arrangement of *Gris et al.*, *i.e.* the printed circuit board being closed, it is obvious that the current-carrying conductor cannot move into the center hole of the coil without **FIRST** interrupting or separating the current-carrying conductor and then passing it through the hole in the center of the coil.

With this arrangement of *Gris et al.*, a non-permanently fixed current-carrying conductor **CANNOT** be measured while the current-carrying conductor is in use without first interrupting or separating the current-carrying conductor.

The requirement of the present invention is to measure a current-carrying conductor when the current-carrying conductor is in **USE**. To execute the measurement it is necessary that the current-carrying conductor be moved into the center of the current acquisition coil **WITHOUT** interrupting or separating the current-carrying conductor, as taught by claims 1 and 12-14.

So it has been shown that *Gris et al.* teaches away from the present invention, a fact that must be considered in determining patentability, as was decided in *General Tire and Rubber Co. v. Firestone Tire and Rubber Co.*, 174 USPQ 427, where the Court held:

"In assessing prior art, court must have regard for all signposts contained in it; it must consider the passages which point away from the invention as well as those said to point toward it...."[at 429][Emphasis added]

"In assessing the prior art, the Court must have regard for all of the signposts contained in it. It must consider the passages and references which point away from the invention as well as those said to point toward it."[at 429] [Emphasis added]

And, in *In re Gurley*, 27 F.3d 551, 31 USPQ.2d 1130 (Fed. Cir. 1994), where the Court held:

"Prior art reference that "teaches away" from claimed invention is significant factor to be considered...."[Emphasis added]

And, in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550-51, 220 USPQ 303, 311 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984), where the Court held:

"District court that considers references in less than their entirety, i.e., in disregarding disclosures in references that diverge away from teach away from invention at hand, errs."[at 304][Emphasis added]

"...in considering the references in less than their entirety, i.e., in disregarding disclosures in the reference that diverge from and teach away from the invention at hand. In re Kuderna, 426 F.2d 385, 165 USPQ 575 (CCPA 1970)." [at 311][Emphasis added]

The solid coil of *Gris et al.* requires that the current-carrying conductor must first be interrupted or separated in order to be passed through the center hole therein and would therefore be non-productive in providing the slitted coil of the present invention that allows the current-carrying conductor to be passed through the slit and into the center hole **WITHOUT** having to be first interrupted or separated.

The signposts of *Gris et al.* that teach away from the present invention must be considered in creating a holding of unpatentability, as required by *General Tire and Rubber Co. v. Firestone Tire and Rubber Co.*, *In re Gurley*, and *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, which when analyzed will clearly indicate that the Examiner's rejection is improper.

In further contradistinction, with reference to claim 8, *Gris et al.* do not teach "...the printed circuit board (1, 10) for a conductor to be measured accommodates electrical terminals (56), which are connected to each other via printed conductors (52, 54) and at least one through plating (53) in an axial direction in a center of the coil."[Emphasis added] as required by the advantageous distinctive features of claim 8, but rather teach that the through-platings are disposed along the **RADII** of the rectilinear metal deposits, as shown in **FIGURE 1** of *Gris et al.* and as discussed at numerous occurrences throughout *Gris et al.*, for example:

"...electrical connections between the radii on one face and those on the opposite face being implemented by plated through holes that pass through the thickness of the plate."[abstract, lines 6-9, col. 1, lines 59-62, and claim 1, lines 8-11 of *Gris et al.*][Emphasis added]; and

"...the deposits on one of the faces are connected to the deposits on the opposite face

via plated-through holes 4 passing through the plate.”[col. 2, lines 45-47 of Gris *et al.*]
[Emphasis added].

With this arrangement of Gris *et al.*, a permanently fixed current-carrying conductor which is no longer moved around after installation **CANNOT** be measured.

As solved by the limitations of claims 8 and 9, the printed circuit board is closed, but in contrast to Gris *et al.*, the current-carrying conductor is a segment made as a **THROUGH PLATING**. Furthermore, as solved by the limitations of claim 8, the printed circuit board accommodates electrical terminals to connect **TO** the current-carrying.

In still further contradistinction, with reference to claims 5 and 9, Gris *et al.* do not teach “...the printed circuit board (1, or 1 and 10) of the current acquisition coil is made of several layers.”[Emphasis added] as required by the advantageous distinctive features of claims 5 and 9, but rather teach **MULTIPLE INDEPENDENT DISCRETE** current acquisition coils, each on its **OWN** printed circuit board (plate), that are both physically and electrically ganged together, as shown in **FIGURE 3** of Gris *et al.* and as discussed at numerous occurrences throughout Gris *et al.*, for example:

“In a particular embodiment, the coil includes a plurality of plates, disposed parallel to one another and secured together, said coils being connected in series by electrical connections perpendicular to the plates.[col. 2, lines 1-4 of Gris *et al.*][Emphasis added];

“In a particular embodiment of the multi-plate coil....”[col. 2, line 5 of Gris *et al.*][Emphasis added];

“...it is possible to increase the sensitivity of the coil by using a plurality of cards of the type shown in FIG. 1. FIG. 3 shows a coil that comprises three coil cards 31, 41, and 51 which are disposed parallel to one another and which are held together by tie bars 60 passing through the holes 7. The cards 31 and 41 include triangular cutouts of different sizes so as to facilitate interconnecting the coils by means of conductors (not shown) that pass through the plates perpendicularly to their plane.”[col. 3, lines 16-25 of *Gris et al.*][Emphasis added]; and

“...a plurality of plates, disposed parallel to one another and secured together, said coils being connected in series by electrical connections perpendicular to the plates.”[claim 2, lines 2-5 of *Gris et al.*][Emphasis added].

With this arrangement of *Gris et al.*, the current acquisition coil is **NOT** compact by virtue of the current acquisition coil being on a single-layered printed circuit board (plate) that is both physically and electrically ganged to another current acquisition coil, *i.e.* multiple current acquisition coils, each on its own printed circuit board (plate), are both physically and electrically ganged together, and not that each is a single coil made on a multiple-layered printed circuit board (plate).

In view of the cancellation of claim 4 without prejudice or disclaimer, the addition of new claim 14 to include the limitations of cancelled claim 4 and base claim 1, the amendments made *supra* to claims 5 and 7 to reflect proper dependency, and the arguments presented *supra*, applicants respectfully submit that the Examiner's grounds for the rejection of claims 1, 4, 8, and 9 under 35 U.S.C. § 102(a) as being anticipated by *Gris et al.* are no longer tenable and applicants therefore respectfully request that the rejection be withdrawn.

In response to the Examiner's rejection of claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Gris *et al.* in view of Furguson *et al.*, applicants have reviewed *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8, relied upon by the Examiner for the rejection of claims 6 and 10, and are unable to find any **EXPLICIT** reference to its holding stated by the Examiner at page 4, ¶ 7, sub ¶ 4, lines 4-5 of the last Office Action, that:

“...mere duplication of the essential working parts of a device involves only routing skill in the art.”

What *St. Regis Paper Co. v. Bemis Co.* appears to hold appears to be irrelevant to “duplication” of essential working parts of a device, and includes:

1. “Combination cannot be patented unless it is synergistic; that is, results in effect greater than sum of several effects taken separately.”[at 8] [Emphasis added]; and
2. “Incorporation of feature that was work of skillful mechanic rather than inventor is not entitled to patent protection.”[at 9][Emphasis added].

In any event, what the Examiner appears to have done was to take facts beyond the record by stating at page 4, ¶ 7, sub ¶ 4, lines 2-5 of the last Office Action a statement that appears contrary to the PTO policy in *MPEP* § 706.02(a) directing Examiners never to overlook the importance of allowing claims that properly define patentable subject matter:

“It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide [an] additional layer for

each winding, since it has been held that mere duplication of the essential working parts of a device involves only routing skill in the art."
[Emphasis added]

It is improper, if not inequitable, for the Examiner to rely on this fact as the sole evidence for the rejection of claims 6 and 10, as was decided in *In re Ahlert and Kruger*, 165 USPQ 418, 420 (CCPA 1970), where the Court held:

"...assertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art..."[at 418]
[Emphasis added]

"Assertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art..."[at 420]
[Emphasis added]

Having two layers for the printed conductors of the incoming winding and two additional layers for the printed conductors of a returning winding is not a mere duplication of working parts, but rather critical and does deserve patentable weight.

The main argument for the importance of having two layers for each winding is that low tolerances for the size of the windings are possible. Small size differences of the windings provide a high efficient current measurement with low tolerances.

Quod erat demonstrandum, having two layers for the printed conductors of the incoming winding and two additional layers for the printed conductors of a returning winding

is not a mere duplication of working parts, but rather critical and deserving of patentable weight.

If the Examiner still maintains the rejection of claims 6 and 10, applicants respectfully request that the Examiner provide reference(s) that teach(es) the limitations of claims 6 and 10 as required by *In re Ahlert* discussed *supra* or an affidavit by the Examiner detailing the Examiner's knowledge as one of ordinary skill in the art to which the present invention pertains affirming that "It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide [an] additional layer for each winding, since it has been held that mere duplication of the essential working parts of a device involves only routing skill in the art."[Emphasis added], as required by 37 CFR § 1.107(b), where it is ruled that:

"When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons."[Emphasis added]

Regarding claims 7 and 11, applicants respectfully submit that it is well settled that non-analogous art (*Ferguson et al.*) is not material to patentability, as was decided in *Hupp v. Siroflex of America, Inc.*, 122 F.3d 1456, 43 USPQ.2d 1887 (Fed. Cir. 1997), where the Court held:

"Ceramic floor tile structure is not material to patentability of design for mold used to make concrete stones for simulated rock walkways,

since ceramic floor tile is not analogous prior art...."[at 188][Emphasis added]

"As discussed *ante*, the ceramic floor tile is not analogous prior art. As such, it is not material to the patentability of Hupp's design...."[at 1894][Emphasis added]

Applicants respectfully submit further that it is well settled that modification of a primary reference (Gris *et al.*) based on a secondary reference in non-analogous art (Ferguson *et al.*) can not be used for a combination rejection, as was decided in *In re Lobl*, 108 USPQ at 229, where the Court held:

"...rejection may not be based upon modification of patent's structure in view of another patent in non-analogous art; such references may not be combined to form basis for rejection since it is unlikely that one seeking to produce applicant's device would look to such non-analogous art for suggestions."[at 229][Emphasis added]

And, *In re Antle*, 170 USPQ 285 (CCPA), where the Court held that:

"...although 35 U.S.C. 103 requires court to presume full knowledge by inventor of prior art in field of his endeavor, it does not require court to presume full knowledge by inventor of prior art outside such field...."[at 285][Emphasis added]

"Section 35 U.S.C. 103 requires us to presume full knowledge by the inventor of the prior art in the field of his endeavor, but it does not require us to presume full knowledge by the inventor of prior art outside the field of his endeavor. i.e., of 'non-analogous art'...."[at 287][Emphasis added]

References are described as “analogous art” only if a person of ordinary skill would reasonably have consulted such references and applied their teachings in seeking a solution to the problem that the inventor was attempting to solve. *In re Deminski*, 230 USPQ 313 (CAFC 1986).

In applying the above definition of “analogous art” to the case at hand, it is revealed that a person of ordinary skill in the “printed circuit board-based current sensor art of the present invention” would not have reasonably consulted “Ferguson *et al.*” and applied its teachings of “a method of making a radio frequency identification tag” in seeking a solution to the problem of “providing a printed circuit board-based current sensor that is smaller, more cost effective, and can perform a measured value conversion for conditioning measured value signals for open-loop and closed-loop controllers, running comparisons with limiting values and generating ‘too-low’ and ‘too-high’ messages, or for other applications” that the present invention has solved. Therefore, Ferguson *et al.* can not be considered analogous art and cannot be used in a holding of obviousness.

Let’s say hypothetically, however, that Ferguson *et al.* is analogous art, which applicants do not contend as discussed *supra*, a holding of obviousness can still not be made out based upon the principles presented *infra*.

Applicants respectfully draw the Examiner's attention to the fact that the Federal Circuit holds that relevant case law must be relied upon in determining obviousness *ipso facto* the determination of obviousness is a matter of law, as was decided in *In re Deuel*, 51 F.3d 1552, 1557, 34 USPQ.2d (BNA) 1210, 1214 (Fed. Cir. 1995), where the Court held:

"Obviousness is a question of law, which we review *de novo*, though factual findings underlying the Board's obviousness determination are reviewed for clear error. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991); *In re Woodruff*, 919 F.2d 1575, 1577, 16 USPQ2d 1934, 1935 (Fed. Cir. 1990)."[at 1214][Emphasis added]

And, in *Richardson-Vicks Inc. v. The Upjohn Co.*, 122 F.3d 1476, 44 USPQ.2d 1181 (Fed. Cir. 1997), where the Court held:

"The difficulty with RVI's position is that, although the argument has merit when the issue is purely one of fact, it does not follow when the issue involves a question of law. It is black letter law that the ultimate question of obviousness is a question of law."*See Graham v. Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966) (citing *Great A. & P. Tea Co. v. Supermarket Equip. Co.*, 340 U.S. 147, 155, 87 USPQ 303, 309 (1950)); *In re Donaldson Co.*, 16 F.3d 1189, 1192, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994) (*in banc*); *Texas Instruments Inc. v. Unit States Int'l Trade Comm'n*, 988 F.2d 1165, 1178, 26 USPQ2d 1018, 1028 (Fed. Cir. 1993). And we review that legal question without deference to the trial court. *See Gardner V. TEC Sys. Inc.*, 725 F.2d 1338, 1344, 220 USPQ 777, 782 (Fed. Cir. 1984) (district court's conclusion on obviousness "is one of law and subject to full and independent review in this court")."[at 1183][Emphasis added]

In the seminal case of *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467, 15 L.Ed. 2d 545, 86 S. Ct. 684 (1966), the Supreme Court articulated the requirements for a *prima facie* holding of obviousness. The Patent Office has since set forth in *MPEP* § 706.02 a three step requirement for establishing a *prima facie* case of obviousness.

The first step requires that the Examiner must set forth the differences in the claim over the applied references. The second step requires that the Examiner must set forth the proposed modification of the reference which would be necessary to arrive at the claimed subject matter. And, the third step requires that the Examiner must explain why the proposed modification would be obvious.

The Courts require that in order to satisfy the third step for establishing a *prima facie* case of obviousness, the Examiner must identify where the prior art provides a motivating suggestion to make the modifications proposed in the second step for establishing a *prime facie* case of obviousness, as was expressed in the 1992 Federal Circuit Court decision in *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941, where the Court held:

"Contention that one skilled in the herbicidal art would have been motivated to use, with acid commonly known as "dicamba," substituted ammonium salt such as that disclosed in two prior references does not warrant holding that claimed substituted ammonium salt of dicamba for use as herbicide is prima facie obvious, since there is no suggestion for combining disclosures of those references either in references themselves, which are directed to shampoo additives and production of morpholine, respectively, or in knowledge generally available to those skilled in the art." [at 1941][Emphasis added]

"The Solicitor points out that, given the breadth of forms of dicamba (free acid, ester, or salt) disclosed by Richter as having herbicidal utility, one of ordinary skill in the art would appreciate that the dicamba group has significance with respect to imparting herbicidal activity to dicamba compounds. Thus, the solicitor contends, one skilled in the art would have been motivated to uses, with dicamba, substituted ammonium salts made from a known amine, such as the amine disclosed by Zorayan and

Wideman, and would have expected such a salt to have herbicidal activity. Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598-99 (Fed. Cir. 1988). We see no such suggestion in Zorayan, which is directed to shampoo additives, nor Wideman, which teaches that the amine used to make the claimed compound is a byproduct of the production of morpholine. Nor does the board disclosure of Richter fill the gap, for the reasons discussed above." [at 1943] [Emphasis added]

And, in *Gambro Lundia AB v. Baxter Healthcare Corporation*, 110 F.3d 1573, 42 USPQ.2d 1378 (Fed. Cir. 1997), where the court held:

"Prior art article does not provide teaching, suggestion, or reason to substitute computer-controlled valves for system of hoses used in prior art devices, and therefore does not render obvious invention of patent in suit...." [at 1379] [Emphasis added]

"Without a suggestion or teaching to combine, Baxter's case of obviousness suffers a significant deficiency." [at 1384] [Emphasis added]

The Courts further require that even if the prior art may be modified as suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification, as was expressed in the 1992 Federal Circuit Court decision in *In re Fritch*, 922, F.2d 1260, 23 USPQ.2d 1780, where the Court held:

"Mere fact that prior art may be modified to reflect features of claimed invention does not make modification, and hence claimed invention, obvious unless desirability of such modification is suggested by prior art...."[at 1780][Emphasis added]

"The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127."[at 1783] [Emphasis added]

Further, the *Fritch* Court held that the patent applicant may attack the Examiner's *prima facie* determination as improperly made out and tending to support a conclusion of nonobviousness:

"In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art...[The Examiner] can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead to that individual to combine the relevant teachings of the references. The patent applicant may then attack the Examiner's *prima facie* determination as improperly made out, or the applicant may present objective evidence tending to support a conclusion of nonobviousness."[at 1783] [Emphasis added]

In properly applying the *Graham v. John Deere Co.* test in light of, *inter alia* *In re Jones* and *In re Fritch* discussed *supra*, the Examiner must conduct a rigorous examination and analysis of the prior art.

Neither *Gris et al.*, *Ferguson et al.*, nor for that matter any of the other references cited by the Examiner, make any motivating suggestion that, *inter alia* the circuit board of *Gris et al.* can be modified to have the electronic components of *Ferguson et al.* added thereto, as suggested by the Examiner.

It appears that the Examiner has merely combined elements in a piecemeal manner in light of applicants' disclosure to show obviousness by using applicants' own specification as though it were prior art and in so doing has violated the basic mandate inherent in 35 U.S.C. § 103 that a piecemeal reconstruction in light of applicants' disclosure cannot be used for a holding of obviousness, as was decided in *In re Stephens, Wenzl, and Browne*, 145 USPQ 656 (CCPA 1965), where the Court held:

"References may not be [modified] indiscriminately and with guidance from applicant's disclosure to show that the claims are unpatentable." [at 656] [Emphasis added]

"In our consideration of the record in light of appellants' arguments, we find nothing which demonstrates that the examiner and the board erred in rejecting the claims. While we agree with appellants that references may not be [modified] indiscriminately and with guidance from appellants' disclosure to show that claims are unpatentable...." [at 657] [Emphasis added]

Let's say further hypothetically, however, that not only is *Ferguson et al.* analogous art, which applicants again do not contend as discussed *supra*, but that there is also a motivating suggestion to modify the circuit board of *Gris et al.* to have the electronic components of *Ferguson et al.* added thereto, which applicants do not contend as discussed *supra*, a holding of obviousness can still not be made out because claims 7 and 11 have been

amended, pursuant to 37 CFR § 1.111(c), to define the following advantageous distinctive feature that distinguishes over and avoids the prior art:

..."components for an electronic evaluation circuit (19), which issues a scaled signal to an output (13), are arranged on a printed circuit board segment (9) not used for the coil."
[Emphasis added]

With this arrangement of the present invention, the device is smaller, more cost effective, and can perform a measured value conversion for conditioning measured value signals for open-loop and closed-loop controllers, running comparisons with limiting values and generating "too-low" and "too-high" messages, or for other applications. Page 3, line 19 to page 4, line 2 of the application.

In contradistinction, Furguson *et al.* teaches the **GENUS** of just signals flowing among components via wire connections printed on a substrate as opposed to the **SPECIE** of applicants' claims 7 and 11, as discussed at col. 1, lines 20-24 of Furguson *et al.* relied upon by the Examiner as discussed *infra*, where it is disclosed:

"According to well known prior art designs, the signal flow between electronic components is effected by wire connections (e.g. copper traces) printed on the substrate. The electronic components themselves are connected to these wire traces by solder."[Emphasis added]

And, as confirmed by the Examiner at page 4, ¶ 7, sub¶ 4, lines 7-8 of the last Office Action, where it is stated:

“Ferguson *et al.* disclose[] electronic component[s] on the circuit board for purpose of sensing signals to the circuit [col. 1, lines 20-2[4][of Ferguson *et al.*]].”

One cannot reject a species by finding a genus. *In re Gosteli*, 872 F.2d 1008, 10 USPQ.2d 1614 (Fed. Cir. 1989); and *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960).

With this arrangement of Ferguson *et al.*, the device is larger, less cost effective, and **CANNOT** perform a measured value conversion for conditioning measured value signals for open-loop and closed-loop controllers, running comparisons with limiting values and generating “too-low” and “too-high” messages, or for other applications.

In light of, *inter alia* *St. Regis Paper Co. v. Bemis Co.*, MPEP § 706.02(a), *In re Ahlert and Kruger*, 37 CFR § 1.107(b), *Hupp v. Siroflex of America, Inc.*, *In re Lobl*, *In re Antle*, *In re Deminski*, *In re Deuel*, *Richardson-Vicks Inc. v. The Upjohn Co.*, the *Graham v. John Deere Co.* test in light of, *inter alia* MPEP § 706.02, *In re Jones*, *Gambro Lundia AB v. Baxter Healthcare Corporation*, and *In re Fritch*, and *In re Stephens*, *Wenzl*, and *Browne* discussed *supra*, pursuant to *In re Fritch* at 1783 discussed *supra* applicants attack the Examiner's *prima facie* determination as being improperly made out and tending to support a conclusion of nonobviousness.

In view of the amendments made *supra* to claims 7 and 11 and the arguments presented *supra*, applicants respectfully submit that the Examiner's grounds for the rejection of claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Gris *et al.* in view of Ferguson

et al. are no longer tenable and applicants therefore respectfully request that the rejection be withdrawn.

In summation, applicants have provided clear and convincing evidence that neither *Gris et al.* *Ferguson et al.*, nor for that matter any of the other references cited by the Examiner, accomplishes applicants' result of providing an efficient printed circuit board-based current sensor that, *inter alia*:

1. Allows measurement of a non-permanently fixed current-carrying conductor while the current-carrying conductor is in use without interrupting or separating the current-carrying conductor by moving the current-carrying conductor into the center of the current acquisition coil without interrupting or separating the current-carrying conductor.
2. Allows measurement of a permanently fixed current-carrying conductor which is no longer moved around after installation by virtue of the current-carrying conductor parts being positioned on the outer periphery of the printed circuit board and the through-plating segment of the current-carrying conductor being positioned at the center of the printed circuit board.
3. Provides a single-piece current acquisition coil that is compact because of more free space for the geometric configuration of the printed conductors by virtue of the single-piece current acquisition coil being on a multi-layered printed circuit board.

4. Provides a highly efficient current measurement with low tolerances for the size of the windings.
5. Provides a device that is smaller, more cost effective, and can perform a measured value conversion for conditioning measured value signals for open-loop and closed-loop controllers, running comparisons with limiting values and generating "too-low" and "too-high" messages, or for other applications."

Therefore a holding of unpatentability cannot be made out, as was decided in *In re Wright*, 122 USPQ 522 (CCPA 1959), where the Court held:

"Mere aggregation of old parts or elements which, in the aggregation, perform or produce no new or different function or operation is not a patentable invention than that heretofore performed or produced by them, is not patentable invention [but] a novel combination of old elements which so cooperate with each other so as to produce new and useful result or substantial increase in efficiency, is patentable." [at 522][Emphasis added]

"The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation is not a patentable invention than that heretofore performed or produced by them, is not patentable invention. *A. & P. Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 151, 87 USPQ 303, 305 (1950) [but] a novel combination of old elements which so cooperate with each other so as to produce a new and useful result or a substantial increase in efficiency, is patentable. See *Lewyt Corp. v. Health-Mor, Inc.*, 7 Cir., 181 F.2d 855, 85 USPQ 335, certiorari denied 340 U.S. 823, 71 S.Ct. 57, L.Ed. 605, 87 USPQ 432; *Blaw-Knox Co. v. Lain Co.*, 7 Cir., 230 F.2d 373, 108 USPQ 356. *Weller Manufacturing Company v.*

Wen Products, Inc., 7 Cir., 231 F.2d 795, 798,
109 USPQ 73, 75 (1956)."[at 524][Emphasis
added]

Support for the amendments made to claims 5 and 9 can be found inherently and/or explicitly, *inter alia* in: the specification at page 3, lines 13-14, at page 4, lines 3-4, at page 5, lines 12-13, at page 5, line 16 to page 6, line 6, and at page 7, lines 3-4; and in **FIGURE 1**, which forms a part of the original disclosure. Therefore, the amendments made to claims 5 and 9 do not constitute new matter.


Support for the amendments made to claim 7 and 11 can be found inherently and/or explicitly, *inter alia* in: the specification at page 3, lines 17-19, at page 3, line 20 to page 4, line 2, at page 5, lines 13-15, at page 6, line 23 to page 7, line 2, and at page 7, lines 12-14; and **FIGURES 1, 4, and 5**, which form a part of the original disclosure. Therefore, the amendments made to claims 7 and 11 do not constitute new matter.

The prior art made of record and not relied upon has been duly noted and carefully considered.

In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration and withdrawal of the objections and rejections are respectfully requested.

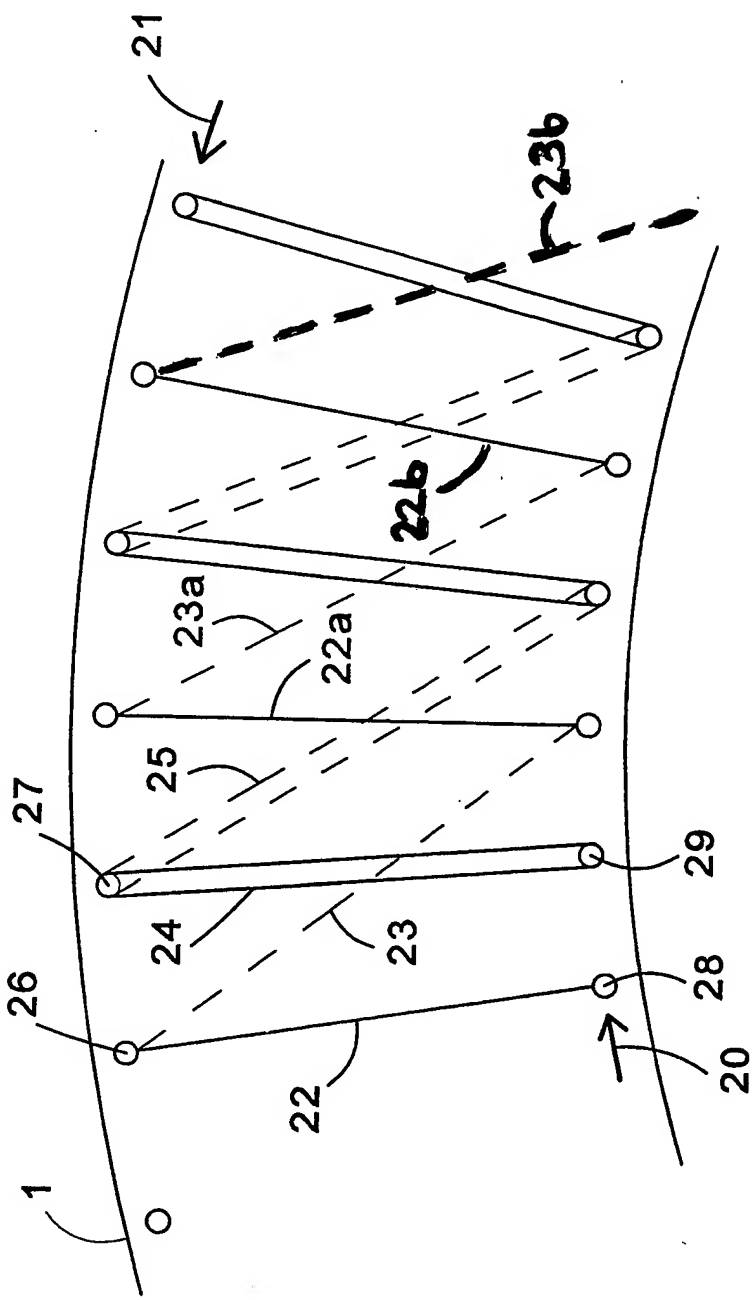
Allowance of claims 1 and 5-14 at an early date is earnestly solicited.

Respectfully,

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Figur 2